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Field Service Procedure

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Installation of Novametrix SpO_2 Module in Narkomed 4

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INSTALLATION PROCEDURE

NOTE: The following instructions apply to installation of a Novametrix pulse oximeter module in place of an existing Nellcor module on a Narkomed 4. The location of the pulse oximeter assembly within the monitor box is shown in Figure 1. Typical assemblies are illustrated; there may be variations in the circuit board arrangements and the shape of the mounting bracket. The monitor box cover must be removed to gain access to this assembly.

1. Turn the System Power switch to STANDBY, remove AC power from the machine and disable the circuit breakers.

CAUTION: Do not plug or unplug remote display with power applied.

2. Disconnect the following items from the patient interface panel on the left side of the monitor box:

   -Remote Display & Datagrip cables
   -Pulse Oximeter Sensor cable
   -BP Cuff and BP Gauge lines

3. Remove the disposable reservoir from its holder.

4. Remove the screws holding the monitor box cover, and carefully lift the cover from the monitor box.

5. Disconnect all backplane wire harnesses and cables to the SpO_2 assembly, and disconnect the interface panel cable.

6. Loosen the two captive screws holding the assembly to the monitor box, and remove the assembly. On later designs the SpO_2 assembly is located next to the gas analyzer, and the speaker is located on the card cage assembly. See Figure 1.

NOTE: Record the serial number and the firmware version number of the Novametrix module you are installing, on the PMS form or other service documentation. See Figure 3.

INSTALLATION PROCEDURE (continued)

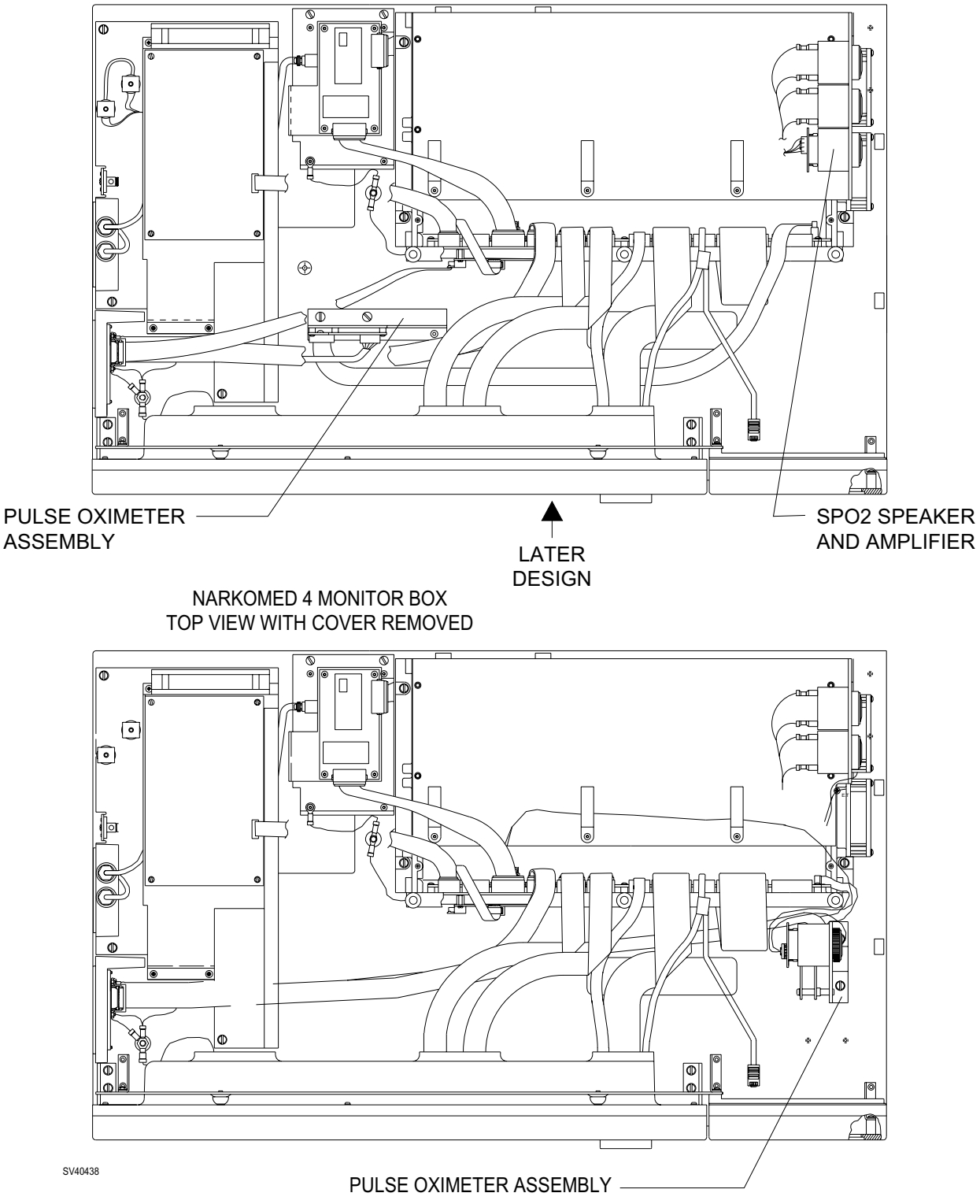


Figure 1: PULSE OXIMETER ASSEMBLY LOCATION

INSTALLATION PROCEDURE (continued)

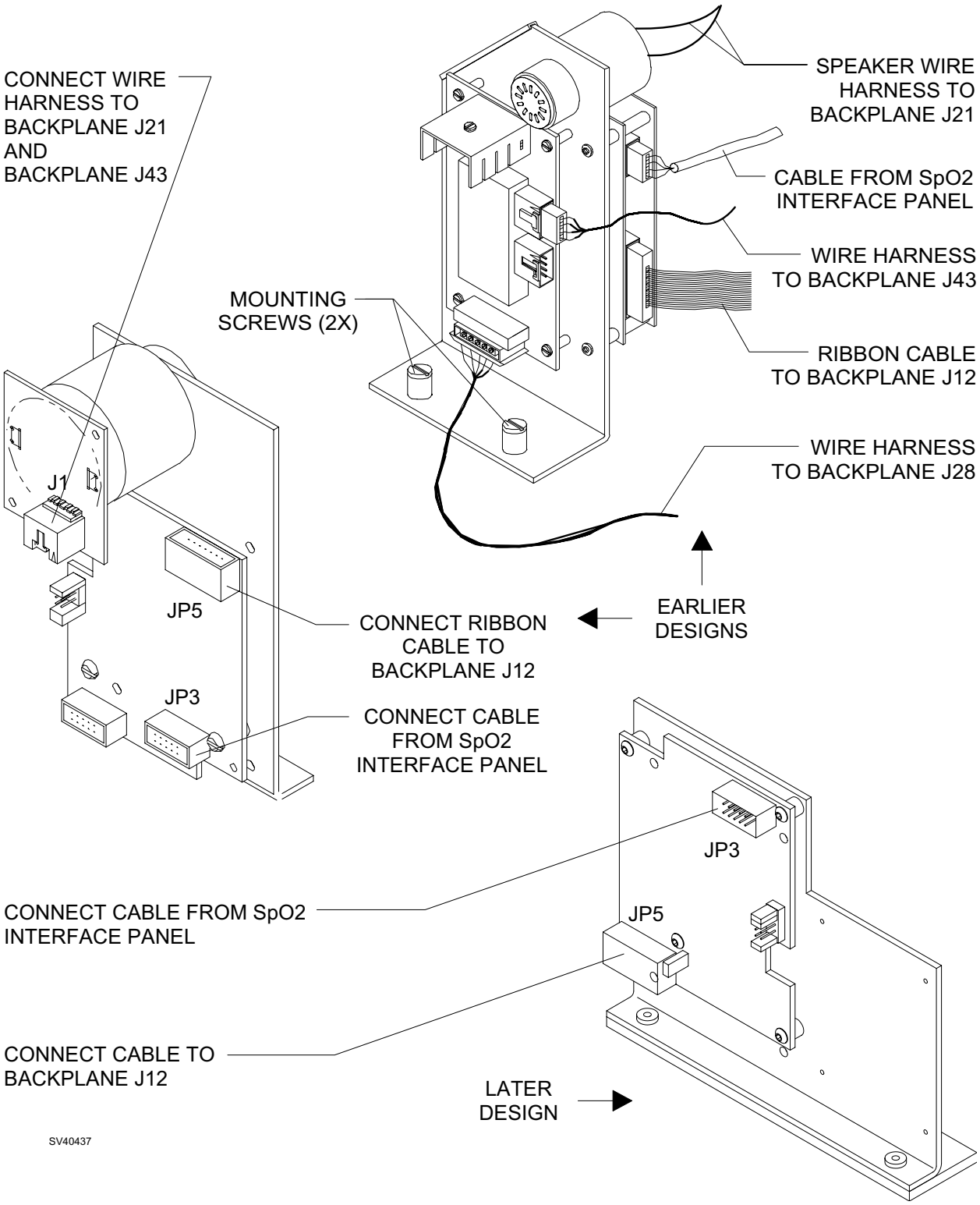
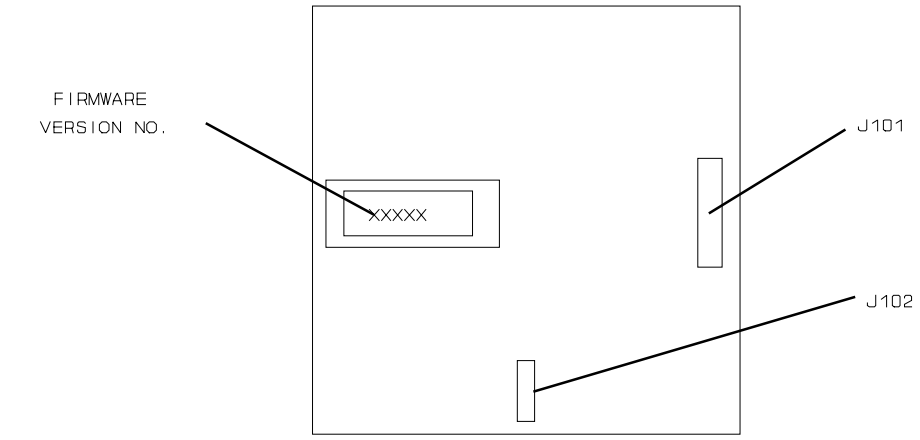
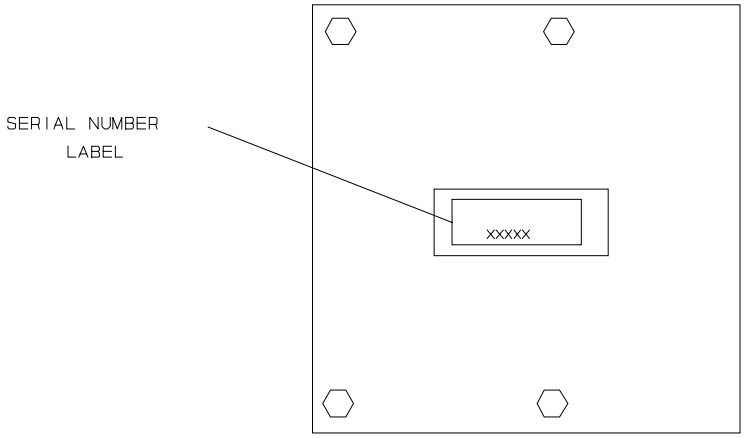


Figure 2: NELLCOR PULSE OXIMETER ASSEMBLIES

INSTALLATION PROCEDURE (continued)



NOVAMETRIX SPO2 MODULE
(COMPONENT SIDE)



NOVAMETRIX SPO2 MODULE
(SHIELD PLATE SIDE)

Figure 3: NOVAMETRIX PULSE OXIMETER MODULE

INSTALLATION PROCEDURE (continued)

The following steps apply to the earlier design SpO_2 assembly with a power PCB. See Figure 1 and Figure 2.

7.1A Remove the four mounting screws securing the SpO_2 power PCB to the chassis and remove the PCB.

7.2A Remove the four mounting screws securing the SpO_2 module to the chassis on the captive screw side of the chassis, and remove the module.

7.3A Install the Novametrix SpO_2 module to the chassis with the hardware supplied in the kit in the same manner as the original module, with the shield against the chassis and J102 (7-pin white connector) of the SpO_2 module toward the bottom of the chassis captive screws.

7.4A Reinstall the SpO_2 power PCB.

7.5A Proceed to Step 8.

The following steps apply to the earlier design SpO_2 assembly without the power PCB. See Figure 1 and Figure 2.

7.1B Remove the four mounting screws securing the SpO_2 module to the chassis on the captive screw side of the chassis, and remove the module.

7.2B Install the Novametrix SpO_2 module with the hardware supplied in the kit in the same manner as the original module, with the shield against the chassis and J102 (7-pin white connector) of the SpO_2 module toward the bottom of the chassis captive screws.

7.3B Proceed to Step 8.

The following steps apply to the later design SpO_2 assembly. See Figure 1 and Figure 2.

7.1C Remove the four mounting screws securing the SpO_2 module to the chassis, and remove the module.

7.2C Install the Novametrix SpO_2 module to the bracket with the hardware supplied in the kit. Position the new module in the same manner as the original module with J102 (7-pin white connector) toward the chassis plate using the four pre-drilled holes without pems.

7.3C Proceed to Step 8.

8. Install the replacement assembly in the same position as the original.

9. Remove the two screws securing the oximeter sensor plate form the machine's interface panel and remove the existing interface cable from the sensor plate.

10. Install the Novametrix interface cable supplied in the kit to the oximeter sensor plate and reinstall the plate to the interface panel. Install opposite end of interface cable into J102 of Novametrix module.

The next step applies to earlier designs only.

11. Remove the ribbon cable from backplane J12, and install the ribbon cable supplied in the kit from backplane J12 to J101 on the Novametrix module. Add a 3½ in. grommet strip supplied in the kit on the card cage chassis at the point where J12 exits the backplane.

INSTALLATION PROCEDURE (continued)

12. Connect the interface panel cable, and connect the backplane wire harnesses and cables. (On earlier models without the speaker amplifier board, ensure that the black wire is connected to the (+) speaker terminal.)

13. Record the Novametrix module serial number and firmware version number on the PMS form.

14. Reinstall the monitor box cover and connect the remote display cable, BP cuff and BP gauge lines, and the oximeter sensor cable at the left side panel of the monitor box. Replace the disposable reservoir.

15. Add the Operator's Instruction Manual Supplement (P/N 4114884) to the Operator's Instruction binder.

16. Restore power to the machine.

17. Perform a PMS procedure on the machine, including the Novametrix Monitor calibration check given on the following pages. Figure 4 shows the front panel of the Novametrix TB500B Sensor Simulator, with a description of its controls.

INSTALLATION PROCEDURE (continued)

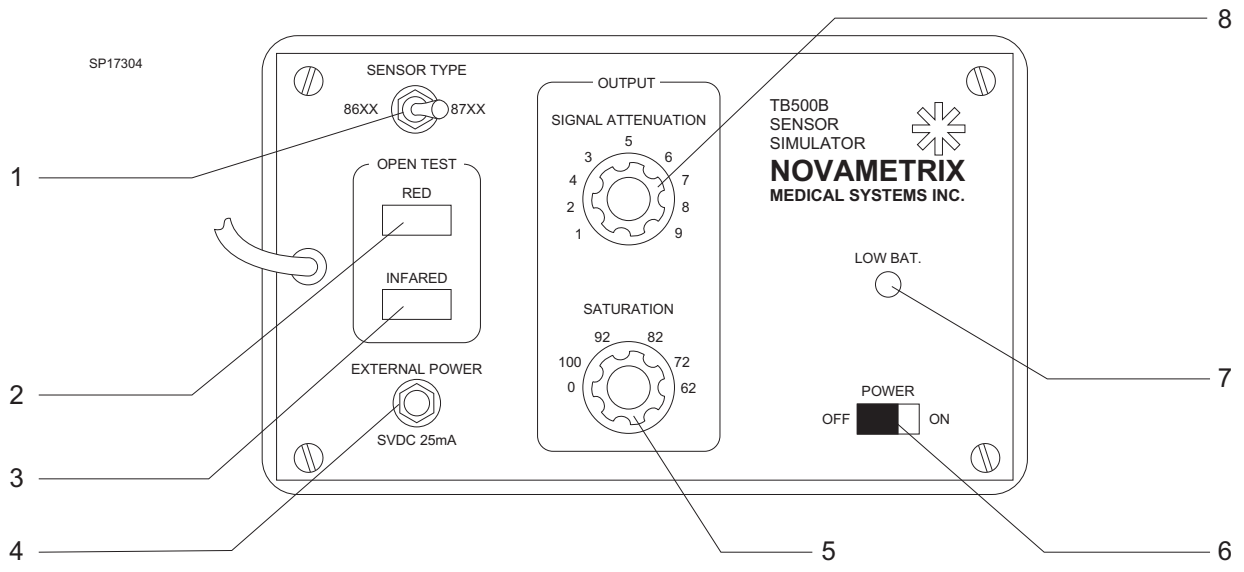


Figure 4: TB500B Front Panel

1. SENSOR TYPE: selects sensor type to be simulated. Use 86XX for non-SuperBright™ monitors, and 87XX for SuperBright.

2. RED: open push-button to simulate red LED failure.

3. INFRARED: open push-button simulates open infrared LED.

4. EXTERNAL POWER: Jack is used to connect power from an external 9 VDC source. When powered externally, the simulator's internal battery is disconnected.

5. SATURATION: selects the simulated saturation value.

6. POWER: On/Off switch; should be in the Off position when simulator is not in use.

7. LOW BAT: LED indicates when the internal battery is low.

8. SIGNAL ATTENUATION: varies the signal strength that the monitor responds to.

INSTALLATION PROCEDURE (continued)

Novametrix Monitor SpO2 Calibration Check:

1. Plug the SpO2 sensor extension cable into the machine interface.

2. Disconnect the finger probe from the extension cable and attach a Novametrix TB500B sensor simulator to the extension cable.

3. Turn the System Power switch to ON. press and hold the Selection Dial, and simultaneously press the MONITOR and SYSTEM CONFIG keys to enter the main service screen. Touch the MONITORS key to bring up a second column of touch keys.

4. Touch the SpO2 key on the screen.

5. Set the simulator's Sensor Type switch to 87XX. Set the output signal to 3 and the saturation to 82%. Turn the simulator ON and verify that the monitor's displayed Pulse reading is 60 ±1 BPM and the SaO2 reading is 82 ±2.

NOTE: Do not rely on the simulator's low battery LED as an indicator of sufficient battery power. Replace the battery with a fresh 9 volt transistor battery if proper measured values are not obtained and the battery measures ≤8.5 VDC.

6. Adjust the simulator's saturation setting to 100 and verify that the monitor indicates 99 ±1. Adjust the saturation to 62 and verify that the monitor indicates 62 ±2.

7. Depress the Open Test RED key and verify that the PULSE LO LED activates, a continuous audible alarm is heard, and a NO OXI PULSE warning alarm is shown on the central alarm display.

8. Depress both Open Test keys together and verify that the monitors SaO2 and OXI ALARMS DISABLE indicators activate, a single audible tone is heard, and OXI SEN DISC advisory alarm is shown on the central alarm display. Release the Open Test keys.

9. Disconnect the simulator and re-connect the finger probe. Attach the sensor to the operator's finger and obtain pulse, and oxygen saturation readings. Disconnect the sensor from the finger. Afther ten (10) seconds, the Warning message NO OXI PULSE shall appear on the central alarm display and a continuous audible alarm shall sound.

10. Re-connect the sensor to the finger.

11. Note the pulse high and low alarm settings. After pulse and oxygen saturation readings stabilize, raise the pulse low alarm limit above the actual pulse rate.

12. The Warning message OXI PULSE LOW shall appear on the central alarm display and a continuous audible alarm shall sound.

13. Return the pulse low alarm to its previous settings.

14. Decrease the pulse high alarm limit below the actual pulse rate.

INSTALLATION PROCEDURE (continued)

15. The caution message OXI PULSE HIGH shall appear on the central alarm display and an intermittent audible alarm shall sound.

16. Return the pulse high alarm limit to its previous setting.

17. Note the SpO2 SAT high and low alarm settings. Raise the SAT low alarm limit above the actual SpO2 level.

18. The Warning message SpO2 SAT LOW shall appear on the central alarm display and a continuous audible alarm shall sound.

19. Return the SAT low alarm to its previous setting.

20. Decrease the SAT high alarm limit below the actual SpO2 level.

21. The caution message SpO2 SAT HIGH shall appear on the central alarm display and an intermittent audible alarm shall sound.

22. Return the SAT high alarm to its previous setting.

23. Remove finger from sensor and set the SpO2 monitor to Standby.

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